

WEST Search History

[Hide Items](#)[Restore](#)[Clear](#)[Cancel](#)

DATE: Thursday, September 07, 2006

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
		<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L7	(vitamin adj B6) same L1	27
<input type="checkbox"/>	L6	(vitamin adj B6) same L4	1
<input type="checkbox"/>	L5	vitamin same L4	2
<input type="checkbox"/>	L4	(clone or recombinant) same L3	21
<input type="checkbox"/>	L3	express\$5 same L2	151
<input type="checkbox"/>	L2	(gene or sequence or polynucleotide) same L1	251
<input type="checkbox"/>	L1	((erythronate-4-phosphate adj dehydrogenase)or (4-phosphoerythronate adj dehydrogenase)or (phosphoerythronate adj dehydrogenase) or pdx?)	815

END OF SEARCH HISTORY

NiceZyme View of ENZYME: EC 1.1.1.290

Official Name

4-phosphoerythronate dehydrogenase.

Alternative Name(s)

4-O-phosphoerythronate dehydrogenase.

4PE dehydrogenase.

Erythronate-4-phosphate dehydrogenase.

Reaction catalysed

4-phospho-D-erythronate + NAD(+) \rightleftharpoons (3R)-3-hydroxy-2-oxo-4-phosphonooxybutanoate + NADH

Comment(s)

- This enzyme catalyzes the second step in the biosynthesis of the coenzyme pyridoxal 5'-phosphate in *Escherichia coli*.
- The reaction occurs predominantly in the reverse direction.
- Other enzymes involved in this pathway are EC 1.2.1.72, EC 2.6.1.52, EC 1.1.1.262, EC 2.6.99.2 and EC 1.4.3.5.

Cross-references

PROSITE PDOC00063

BRENDA 1.1.1.290

PUMA2 1.1.1.290

PRIAM enzyme-specific profiles 1.1.1.290

Kyoto University
LIGAND chemical database 1.1.1.290

IUBMB Enzyme
Nomenclature 1.1.1.290

IntEnz 1.1.1.290

MEDLINE Find literature relating to 1.1.1.290

MetaCyc 1.1.1.290

Q8A2E4, PDXB_BACTN;	Q7VRU9, PDXB_BLOFL;	Q83AR8, PDXB_COXBU;
Q8XCR0, PDXB_ECO57;	Q8FFH2, PDXB_ECOL6;	P05459, PDXB_ECOLI;
Q6D2N5, PDXB_ERWCT;	Q7N2B2, PDXB_PHOLL;	Q6LNU2, PDXB_PHOPR;
Q7MV70, PDXB_PORGI;	Q9I3W9, PDXB_PSEAE;	Q88L20, PDXB_PSEPK;



ENZYME: 1.1.1.290

[Help](#)

Entry EC
1.1.1.290 Enzyme

Name 4-phosphoerythronate dehydrogenase;
PdxB;
PdxB 4PE dehydrogenase;
4-O-phosphoerythronate dehydrogenase

Class Oxidoreductases
Acting on the CH-OH group of donors
With NAD⁺ or NADP⁺ as acceptor

Sysname 4-phospho-D-erythronate:NAD⁺ 2-oxidoreductase

Reaction 4-phospho-D-erythronate + NAD⁺ =
(3R)-3-hydroxy-2-oxo-4-phosphonooxybutanoate + NADH + H⁺
[RN:R04210]

Substrate 4-phospho-D-erythronate [CPD:C03393];
NAD⁺ [CPD:C00003]

Product (3R)-3-hydroxy-2-oxo-4-phosphonooxybutanoate [CPD:C06054];
NADH [CPD:C00004];
H⁺ [CPD:C00080]

Comment This enzyme catalyses the second step in the biosynthesis of the coenzyme pyridoxal 5'-phosphate in *Escherichia coli*. The reaction occurs predominantly in the reverse direction [3]. Other enzymes involved in this pathway are EC 1.2.1.72 (erythrose-4-phosphate dehydrogenase), EC 2.6.1.52 (phosphoserine transaminase), EC 1.1.1.262 (4-hydroxythreonine-4-phosphate dehydrogenase), EC 2.6.99.2 (pyridoxine 5'-phosphate synthase) and EC 1.4.3.5 (pyridoxamine-phosphate oxidase).

Reference

- [PMID:2121717]
Lam HM, Winkler ME.
Metabolic relationships between pyridoxine (vitamin B6) and serine biosynthesis in *Escherichia coli* K-12.
J. Bacteriol. 172 (1990) 6518-28.
- [PMID:11844765]
Pease AJ, Roa BR, Luo W, Winkler ME.
Positive growth rate-dependent regulation of the *pdxA*, *ksgA*, and *pdxB* genes of *Escherichia coli* K-12.
J. Bacteriol. 184 (2002) 1359-69.
- [PMID:8550422]
Zhao G, Winkler ME.
A novel alpha-ketoglutarate reductase activity of the *serA*-encoded 3-phosphoglycerate dehydrogenase of *Escherichia coli* K-12 and its possible implications for human 2-hydroxyglutaric aciduria.
J. Bacteriol. 178 (1996) 232-9.
- [PMID:2692566]